

**BANGLADESH AGRICULTURAL RESEARCH PROJECT
US-AID PHASE-II**

**TRAINING AND COMMUNICATION IN AND FOR THE
BANGLADESH AGRICULTURAL RESEARCH COUNCIL
AND THE CONSTITUENT INSTITUTES**

A CONSULTANCY REPORT

BY

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INTERNATIONAL AGRICULTURAL DEVELOPMENT SERVICE

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TRAINING AND COMMUNICATION
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Report of
DR. FRANCIS C. BYRNES, IADS CONSULTANT

November 11-25, 1983

Dhaka

1. INTRODUCTION

Dr. Francis C. Byrnes, Program Consultant to the International Agricultural Development Service (IADS) in training and communication, spent the period of November 11-25, 1983 in Bangladesh at the request of Bangladesh Agricultural Research Council (BARC). The initial terms of reference for the consultancy were as follows:

1. To assess the prescribed role and function of the Training Cell and to expose and explicate the anticipated outcomes of this role and function.
2. To assess financial, human and physical resources available for the accomplishment of the role and function assigned to the Training Cell.
3. To examine methods by which training needs might be met through in-country activities.
4. To assess the present state of research on questions of technology dissemination in Bangladesh and recommend possible future action.
5. To recommend strategies for establishment of technology dissemination through effective linkages.

Upon arrival in Dhaka, these terms were revised to include a review of the role and functions of the communication activities in BARC, and their present and possible future relation to training activities. At the same time, it was agreed that there was not time from assessment of the present state of research on technology dissemination. With respect to the issue of strategies for technology dissemination through effective linkages, the consultant conducted a lecture-discussion on November 20 on the topic "Principles Among Panaceas for Promoting Use of New Agricultural Technology." BARC widely distributed announcements to other agencies inviting their attendance (Annex A). Approximately 100 persons attended.

The consultant carried out this assignment by (a) reading reports and memoranda relating to all aspects of BARC operations; (b) attending briefings by BARC officers and IADS staff members assigned to BARC; (c) conducting interviews and briefings in various other agencies in the company of Mr. Ahmed Hussain and Dr. Dorsey F. Davy (Annex B), and (d) inspecting some of the training and communication facilities within BARC, its constituent institutes, and other Ministry of Agriculture organizations.

This report represents the consultant's efforts to abstract data, information, opinions, and observations into a synthesis of utility to the BARC officers who plan and carry out training and communication programs. The consultant has tried to make this report as concise, clear, and on-target as possible so as to be most useful to everyone concerned.

He does wish to thank the Executive Vice-chairman of BARC, Dr. Kazi M. Badruddoza, for this opportunity to gain insight on the tremendous progress BARC has made since the consultant visited Dhaka in 1979. This progress is most reassuring and it is reinforced by the professional stature and dedication evidenced by the senior staff members, such as Mr. Ahmed Hussain, whose cooperation enabled the consultant to accomplish so much in a relatively short time.

The writer expresses a special thanks to Mr. Ahmed Hussain and to Dr. Dorsey Davy and Dr. Theodore Hutchcroft as well as to Mr. A.R.M. Fakhrul Islam whose skills on the word processor were most timely and appreciated.

2. CURRENT SITUATION

Background

Some four years ago (May 1, 1979), the writer completed a week's consultancy in BARC and reported to the Executive Vice-Chairman, Dr. M. Amirul Islam, and the IADS Project Supervisor, Dr. Murray D. Dawson. His report, consisting of a series of memoranda with annexes, (a) outlined a procedure for manpower planning in BARC and the constituent institutions as a basis for the development of a master training plan, (b) set forth detailed recommendations and proposals for a master plan for training, (c) suggested a strategy for implementing a training program by BARC, and (d) drafted an orientation program for the individual selected to serve as the Training Officer. Copies of these memos have been furnished to Mr. Ahmed Hussain, Training Director, and Dr. Dorsey Davy, Training Specialist.

Developments to Date

While there is no evidence that the referenced memos were incorporated into the files or records of BARC, the consultant began the current assignment with efforts to determine to what extent the recommendations and proposals made in 1979 had been implemented. The original training officer left after a few months in 1979 for an assignment with FAO. The Executive Vice-Chairman retired and was succeeded by Dr. Kazi M. Badruddoza. Another training officer was not designated until September 1981 and the current Training Cell did not begin operation until January 1982. In same month a training specialist was assigned to BARC under the contract with IADS. Developments since January 1982 include the following:

- o Publication in November 1982 of the report, "Research Manpower in the Agricultural Sciences: A Preliminary Report for the BARC Complex of Institutions."

- o Publication in November 1983 of the "Handbook for Manpower Development."

- o Assignment to the Training Cell of the administration of all funds allocated for training. This amount presently is US\$9.395 million, of which U.S.\$3.3 Million comes from USAID.

- o Established and administered 36 in-country degree scholarships.

- o Selected and sent abroad 16 advanced degree candidates, and selected and gained admission for 13 more.

- o Sponsored, arranged, and sent 27 agricultural scientists abroad for specialized training.
- o Sponsored and monitored 20 short-term training activities in country.
- o Sponsored five scientific conferences, workshop and seminars.
- o Continued to refine the original manpower study with a view to publishing a revised edition at an early date.

But Only a Beginning

This is an outstanding record given the limited manpower assigned to the task and the complex environment in which they must operate, yet to represents what might best be termed a "good beginning" toward meeting the personnel development needs and responsibilities of BARC.

There is general agreement within and outside the national agricultural research system of the need for training of all personnel (research, technical, support, and administrative) to higher proficiency and academic levels. While the emphasis has been on advanced degree training for the scientific staff (to the M.S. and Ph.D. levels), the ability of BARC and its constituent institutes to fulfill their challenging mandates is constrained at all levels by inadequate numbers of appropriately qualified individuals. There is a pervasive concern that even many of those with the M.S. and Ph.D. degrees need additional training in research design, project management, data analysis, and the communication of research results.

BARC and most of the constituent institutes, as well as a number of other organizations in the agricultural research, extension, and development sector, have new office buildings, laboratories, and experimental farms. These are generally well-equipped to carry out research functions. To date, only one research institute, Bangladesh Rice Research Institute (BRRI), has well-established facilities, staff, and programs for conducting a variety of training programs for its own staff and those of other agencies. In many respects, BRRI provides an effective model for other institutes.

New and rapidly changing ideas about agricultural research, extension, and development, as well as major reorganizations in some parts of the agricultural sector, have generated countless needs and opportunities for training. One senior official termed the current situation as being "an epidemic of training". Another official said training is used to attract external financial support.

Representatives of some donors say they make major training components and commitments a condition for grants and loans. Whatever the reasons for these demands, it is difficult for the institutions involved to identify and make available sufficient numbers of qualified individuals to plan and carry out the training program.

It is not easy to keep syllabi and content up-to-date, and to introduce more effective instructional techniques than the traditional lecture and rote memory systems. Experiential or "learning by doing" approaches require different types of facilities. More important, instructors are needed with the training, competence, and confidence to break with tradition. There must be a program to "train trainers," not so much in subject matter per se but in how to teach and communicate that subject matter to diverse types of clientele ranging from fellow scientists to farmers.

Not surprising, one finds more concern and activity related to innovations in training in the organizations of the Department of Agricultural Extension and in the Central Extension Research and Development Institute (CERDI) which until recently was a semi-autonomous training institution. It is being integrated into the massive training system managed by extension. There is a great opportunity for collaboration and cooperation between the BARC complex of institutions and those affiliated with extension. This includes the 11 agricultural training institutes (3-year diploma programs), most of which are located close to outlying stations or sub-stations of the research system.

Developments Within Institutes

Time permitted visits to two of the component institutes of BARC, the Bangladesh Agricultural Research Institute (BARI) and to BRRI. Discussions with the Directors clearly delineated the differences in the current training needs and activities between a relatively new entity, BARI, and the more mature, well-established BRRI.

The new Director of BARI said the training needs included financial management, administrative services, procurement and stores management, farm management, training and communication (for scientists), and sharply focused, practical short-term programs for scientists in research methods and procedures. He desires study tours for senior people, training in repair and maintenance procedures for laboratory technicians and analysts, and training for field technicians in the management of field trials and in taking and recording data.

Much training of this type has been accomplished or is operational

at BIRRI, an institution which has received considerable assistance in training from IRRI over many years. Personnel and resources at BIRRI are involved in training extension and development workers in the new rice technologies and in multiple cropping systems. A recent innovation is a 4-month field-oriented induction program for new staff members (B.S. level graduates).

BIRRI has professionals in place as training and communication specialists. BARI has provided for such posts in its new table of organization but they have not been filled.

BIRRI is expanding the adaptive research activities around the Joydebpur site as well as at regional field stations. It has close links with the Department of Extension, the Water Development Board and other agencies, and is expanding and strengthening this network for making technology available to farmers through training and communication.

The Directors of both institutes described what they see as significant roles for BARC with respect to training and communication. The BARI director outlined a training role for BARC as follows:

- a. Assist institutes in developing training plans.
- b. Prepare each year a national training plan and assist in estimating financial and personnel needs.
- c. Monitor implementation of the plan.
- d. Manage the overseas training activities.

He believes that it is more difficult to centralize communication activities, but outlined the following as significant roles for BARC in communication:

- a. Provide central documentation services.
- b. Compile and publish an annual report of the achievements of the national agricultural research system.
- c. Provide for production and reproduction of training and communication materials common to all institutes.
- d. Summarize and consolidate research results for transfer to farmers through extension.
- e. Establish linkages with international and regional agencies and

arrange for them to be connected to the relevant institutes within Bangladesh.

The BRRRI Director cited a number of ways in which BARC could help with training:

a. Serve as a coordinating intermediary in the preparation of syllabi, to develop teaching aids, to identify resource persons, to prepare training manuals, and to train trainers.

b. Assist in the development of programs of instruction.

c. Assemble and produce texts; draw materials together from various institutes.

d. Initiate action to improve instruction at the post graduate level in local universities. Encourage greater use of research facilities at institutes for graduate level studies.

BRRRI has an active communication program that produces bulletins, conference proceedings, and related materials. It is expanding its production facilities by installing printing equipment.

CERDI in Transition

Another activity in the Joydebpur complex is relevant to the development of long range training and communication activities, particularly with respect to linkages with extension. This is the Central Extension Resources Development Institute, established with support from Japan in 1975. CERDI has trained extension workers, carried out limited agricultural research, produced publications and other training materials, and operated community development centers in three sites in Joydebpur Thana.

CERDI's excellent physical plant (classrooms, offices, auditorium, cafeteria, dormitories) appears to under-utilized. In fact, the management has made the facility available to other groups, operating in this sense as a contract conference center.

Until this year, the CERDI staff of 26 officers has been supplemented by a team leader and eight other experts from Japan. The Director General, Department of Extension, has plans to redirect the efforts of CERDI by year end. In the future, it is expected that CERDI will (a) provide training for middle level extension workers in management, administration, and agronomic practices; (b) offer induction training for new extension personnel; (c) prepare teaching

packages for the agricultural training institutes, and (d) provide specialized in-service training for staff of the nearby research institutes.

The Director General described plans to reorganize CERDI along the lines of a senior staff college, drawing staff from other institutions. He considers this is necessary because of the lack of highly competent individuals in the ranks of the most senior personnel of the agency.

He is encouraging effective links between research and extension and believes this can be best accomplished when scientists and extension workers meet and work together in farmers' fields. Believing there is a great deal of indigenous knowledge among farmers in any location, he is encouraging extension workers to identify useful practices and varieties in one area and to try these out in others.

Other Developments and Possibilities

The World Bank presently is supporting a number of agricultural research and extension activities in Bangladesh. The Bank's Agricultural Research Project-II, which focuses on BARC, is expected to become operational in 1984 for 5 years. It will help strengthen research in livestock, fisheries, and forestry, and will have a big training component.

The focus in the Agricultural Extension/Research Project-II now underway is on reinforcing extension activities. A major emphasis is on a master plan for training, particularly for the extension workers from the 10 separate services. Workers from six of these specific commodity services have been consolidated into one general extension service.

Given the interest in and demonstrated need for management training in the agricultural sector, there is a possibility that the Bank's Economic Development Institute may provide some in-country training in research planning and management.

Because of BARC's central role in leading and coordinating large and diverse training activities, its commitment to strengthen the present training office is expected to be discussed in forthcoming negotiations between BARC and the World Bank.

The World Bank also is interested in ways to strengthen the quality of training provided at the 11 agricultural training institutes where the present 2-year program is being expanded to 3 years. The

final year will be spent working in the field. Overall, there is concern about establishing a concentrated approach to diploma training in agriculture.

Experiences and Views of IADS Specialists and BARC Member Directors

All of the IADS resident specialists in BARC and BARI are interested in and involved in various formal and informal training activities. They work with and through professional counterparts, and research and training activities are carried out at BARI and field stations and sites.

They express needs for support from the Training Cell with the logistics for training at field sites as well as at BARC or BARI. Audio visual equipment is not available for their use at BARC nor at most of the field stations.

They find all training requires constant follow-up if it is to take root. Frequently, changes are needed in the work environment if the trained person is to be encouraged and facilitated in using his training.

Present rules and perceptions also result in problems and frustrations. One of these is associated with the requirement that selections for training are made from a number of people nominated for a particular fellowship. As a consequence, the person for whom the training would be most productive sometimes is not chosen. There are problems, too, in obtaining clearance for short-term training of those with the Ph.D. "Why do they need more training?" is a question frequently asked.

In some subjects, such as water management, many departments, divisions, boards, and other agencies under two ministries are involved in training at various levels. Yet additional approaches will be required for needed training to reach personnel, such as inspectors and block supervisors. One of the tasks of the water management specialists at the farm and community levels is to work with and within this complex network to tie training activities more closely to research.

Only two Member-Directors were available to discuss training needs and priorities. Working with an IADS Specialist, one has initiated a series of intensive short courses on statistics and data analysis. The course on descriptive statistics has been presented at four regional stations to a total of 60 scientific officers and senior scientific officers. It is being incorporated into the regular course structure of

the Bangladesh Agricultural University (BAU).

A second course on socio-economics data analysis and partial budgeting was presented once and is expected to become a component of an annual 3-month course at BARI for extension supervisors.

Future efforts will be directed to building on the earlier basic training and to institutionalizing the new courses as developed. These efforts are facilitated by making available the lesson plans, exercises, and references developed.

Next on the agenda is a series of workshops to help staff at the cropping system research sites learn how to analyze the data they are collecting. Then they will be able to prepare and present papers at national conferences. This is expected to accelerate the analysis and utilization of the data this research program is generating.

Activities such as these demonstrate what can be done through in-country training, particularly for reaching personnel at the lower echelons of organizations.

Another Member-Director reiterated the present and projected need to seek efficient ways to provide training for lower level workers and farmers. He said that "top down" training rarely reaches the numbers who must be trained if significant changes are to happen.

He emphasized the importance of providing practical, field-oriented refresher training for university professors. This can help them to know and understand current agricultural problems and what research is doing about them.

Research workers, he commented, sometimes become so deeply involved in their studies that they lose touch with the world of development. One remedy for this would be occasional conferences or workshops which deal with issues broader than research on a particular subject.

3. ISSUES AND PROBLEMS

1. Magnitude and Urgency Of Personnel Development

Further planning and implementation of a personnel development program commensurate with the needs of the national agricultural research system requires the highest priority within BARC. The tasks are complex given the present and projected size of the system, the numbers of institutions involved, the number of agricultural commodities and subjects which must be addressed, the diversity of operational concerns, the new fields of research being undertaken, and the basic shortage of appropriately qualified personnel to manage and staff on-going and special programs.

The challenge is here and now. Considerable resources are available to finance short- and long-term training, but the present BARC commitment of personnel to the task is inadequate in numbers of individuals to plan and execute what needs to be done. Moreover, they need adequate space in which to operate.

2. Role of BARC with Respect to Constituent Institutes

While the mandate of BARC describes a wide range of responsibilities, it is possible to specify three major roles for it in the national agricultural research system:

a. As a dynamic coordinator, stimulator, and innovator of research programs and projects within the constituent institutes and contract research projects elsewhere. In this role, BARC is a leader, counselor, and communication channel to insure maximum productivity and efficiency in research.

b. As the principal mechanism by and through which the research and support personnel of the component institutes can be developed professionally. This requires particular attention to training.

c. As the principal mechanism for promoting and developing effective linkages with other organizations within and outside the country. This requires particular attention to communication.

Commenting on these matters in his 1979 report, this consultant wrote:

"These or similar actions, if carried out in the context of

professional cooperation and collaboration, will contribute significantly to establishing rapport, confidence, and credibility between the institutes and BARC. Just as individuals respond positively to leadership which fosters and promotes individual growth, so will the institutes to an active program to facilitate and promote the continued development of their professional manpower--and thus their ability to address the pressing needs of Bangladesh for the technology and leadership necessary to accelerate agricultural production and development and the ultimate improvements in human welfare."

This situation is just as true today. BARC will succeed to the extent it does everything possible and in the best ways possible, to make sure each institute succeeds and excels in what it is trying to do. If this philosophy is appropriate and sound, then BARC has the responsibility to match performance with promise. It is and will continue to be a tough job.

3. Bureaucratic Environment

While there is not much BARC can do about the problems of personnel development and management imposed by or associated with existing rules and practices, it is appropriate to recognize that these exist. The practice of rotating personnel among jobs every 3 years makes it mandatory to have continual in-service training. Present rules limiting the number of times an individual may leave the country for training leads to resistance by some who are reluctant to sacrifice the possibility to study for an advanced degree for an opportunity to participate in an urgently-needed short term training. Restricting of advanced degree training to those less than 35 years of age may bar experienced individuals from moving into positions of leadership.

Financial, physical and human resources are in short supply; institutions compete vigorously for these resources, each seeking high degrees of self-sufficiency. This leads to duplication of facilities, competition for qualified operational and maintenance personnel, and a reluctance to share certain resources.

Greater cooperation among these institutions for in-service training opportunities would immediately expand the capacity of the nation for in-country academic and short-term training.

Other issues confounding personnel development include: (a) centralization of authority and decision making; (b) inflexibilities in the reward system to provide appropriate incentives for those who use their training to excel in their job; (c) imbalance in staffing ratios

with inadequate numbers of middle level specialists and technicians in relation to the number of individuals with advanced degrees; (d) lack of provisions at present for expanding this middle level or of training opportunities for such personnel, and (e) continued emphasis on training at the higher echelons. These are common characteristics of rapidly developing organizations and institutions. They are cited here not as criticisms but as issues to be addressed in future plans and activities.

4. Lack of National Plan for Agricultural Education

There is no lack of concern in Bangladesh about improving the quality of agricultural education and making opportunities more readily available for greater numbers of persons. If there is a national plan, for the development and management of a system of higher education in agriculture, this consultant did not discover it. While this issue was not included in the terms of reference, it cannot be ignored in any approach to manpower development for the research system.

Among the issues which such a study might include are: (a) reported under-utilization of the training capacity of the Bangladesh Agricultural University; (b) proposed expansion of the agricultural program of the University of Dhaka; (c) future status of the under-graduate institution, Bangladesh Agricultural College, at Farm Gate; (d) establishment of the Institute for Graduate Study in Agriculture about 10 kms from the BARI-BRRI-CERDI complex, and (e) construction of the National Agricultural Library adjacent to the BARC headquarters in Dhaka.

The geographic dispersion of these institutions, especially in relation to the research facilities at Joydebpur and projected library resources at Dhaka, pose serious logistical problems in graduate level education. Moreover, each new institute or program will generate additional demands for professionally trained managers, scientists, and professors.

It is encouraging to note the concentration of agricultural research, extension, and education into the Ministry of Agriculture as well as the sincere effort to link in-country graduate training to the M.S. and Ph.D. level with ongoing agricultural research that is relevant to the nation's development. The goals are commendable; achieving them will require patience, hard work, and a great deal of inter-institutional cooperation and collaboration.

5. Lack of Balance in Attention to Communication

The efficiency and effectiveness of BARC will depend upon the development and operation of a communication system staffed and equipped to provide various information products and activities basic to the operation of BARC (Annex C). This will require provision of posts for communication and information specialists, training of individuals to qualify for these posts, and in-service training in communication for all staff members.

While training is the mechanism for developing the personnel of an organization, communication links the individuals and organizational components into functioning units.

4. RECOMMENDATIONS AND PROPOSALS

Information gathered, observations made, and discussions held with numerous officers in several institutions led to the formulation of the following recommendations and proposals for helping BARC and the constituent institutes to rapidly develop and expand the professional capacities of their agricultural scientists and specialists.

This section outlines a basic strategy for implementing these recommendations and suggests some specific actions.

1. Establish Training and Communication Division.

Given the central and complementary roles which personnel development and communication must play in helping BARC fulfill its mandate, it is logical that the organization provide a comprehensive and integrated training and communication program for the national agricultural research system. This action would broaden the base of and give permanent status to the present responsibilities of BARC in these areas: (1) manpower planning and training, and (2) communication and information services. Neither of these functions presently have clear-cut channels of authority, responsibility, or communication within BARC. There even is some concern that the so-called Training Cell, perceived by some as a temporary arrangement, will disappear.

One logical approach is to establish a Training and Communication Division in BARC with a senior officer as the Director. Such a post would be equal in status and authority to that of a Member-Director of BARC, or, in fact, be designated as a Member-Director.

Successful operation of the T & C Division will depend on the provision of adequate numbers of appropriately qualified professional staff commensurate with the magnitude and significance of the activities to be accomplished. The professional staff will need technicians and support personnel. A tentative table of organization follows. The number of research and training officers would be a function of (a) volume of activities to be undertaken simultaneously, (b) diversity among these activities in subject, location, or trainees, (c) ability of staff assigned to other duties to function in this role on a part-time basis, and (d) extent the specialists must divide their time between planning and organizing training activities and actually managing or teaching in specific courses.

TENTATIVE ORGANIZATION

TRAINING AND COMMUNICATION DIVISION, BARC

Member Director

-- Stenographer/Secretary

PSO (Training)

PSO (Communication)

Research & Training Officers (SSO-4)

Technical Editor (PSO-1)

Fellowship Managers (SSO-2)

Editors (SSO-1)*

Short Course Organizer (SSO-2)

Librarian (PSO-1)*

English Course Organizer (SSO-1)

Documentation Officer
(SSO-1)*

Cartographer (SO-1)

Public Relations
Officer (SSO-1)*

Microcomputer Operation (1)

AV Equipment Operator (1)

Printer (1)

Equipment Technicians (2)

Photographer (1)*

Typists (2)

Exhibit Technician (1)

Clerks (2)

Driver (1)

Typists (2)*

Peons (2)

Peons (4)*

Note: See Annex D for duties and qualifications of training personnel.

* Indicates positions already established in BARC for training and communication.

The PSO (Communication) should be responsible for developing effective links with the Department of Agricultural Extension, the agricultural education system, and other entities with the goal of incorporating up-to-date information about new agricultural technology in the informational and educational materials being produced and used by these agencies. In addition, the T & C materials production facility would provide specialized printing, photographic, exhibit and related services to BARC and the constituent institutes. It would support and complement similar activities in the institutes rather than provide services duplicating those already available.

For the T & C Division to function satisfactorily, it will need offices and equipment necessary to perform its responsibilities. This will require vehicles so training and communication officers may commute between BARC and the research institutes, as well as to regional research and training sites and cooperating institutions.

Criteria will be needed for budgeting various training activities, including allowances to trainees as well as standard honoraria and other expenses associated with in-country training.

2. Broaden Scope of Fellowship Management

Effective management of a fellowship program requires attention to many factors including: establishment of selection criteria and procedures; selection of suitable institutions for potential admissions; orientation of candidates before their departures for training; pre-departure administrative matters; arranging for payments of fees, stipends, and other allowances; monitoring the progress of students while enrolled; planning for their return; debriefing upon return, and providing appropriate follow-up after re-employment.

The limited staff of the present Training Cell can address only the most pressing of these issues. Some of the concerns are ignored; others are relegated to expatriate institutions. The eventual goal is for the Training Office to have the responsibility for the full range of fellowship management and sufficient numbers of qualified personnel to carry out these functions.

When advanced degree training outside of Bangladesh is necessary, it is recommended that every effort be made to place students at institutions in Asian or other Third World countries.

3. Establish Series of Short Courses for Research Personnel

Information gathered during this consultancy indicated the general need throughout the agricultural research system for opportunities for scientists in various disciplines and institutes to become more competent and efficient in planning and managing agricultural research projects, particularly those requiring field experimentation.

Further discussions led to the identification of the following specific types of short-term training:

a. Short Courses on Planning and Managing Agricultural Research Projects.

Such short courses or workshops could be conducted for about 20 individuals each, in a 4-to-6 week period. This depends upon the commodity or subject, the season, and the level of competence of those enrolled. The consultant was told such short courses would be useful for scientists engaged in research in at least the following areas: wheat, maize, oilseeds, vegetable crops, specialty crops, animal nutrition, water management (pumps and motors), water management (field preparation/land formation), and farming systems.

In 1968, the International Rice Research Institute (IRRI) designed and conducted such a 6-week course for scientists working with rice in Asian countries. The success of this course and the enthusiasm with which it has been received has led IRRI to offer similar courses at least three times since. More recently, a similar course was conducted for scientists engaged in multiple cropping research.

It is expected that many of the materials and methods of IRRI could be adapted for use in the various courses which BARC might organize for scientists in the constituent institutes and perhaps for others in BAU, Department of Agricultural Extension, and other agencies and universities.

b. Training in Teaching and Workshop Methods in Agricultural Research

This should be a one-week course for up to 36 individuals at a time in how to organize and conduct training in which the basic method is "learning by doing". It should be repeated quarterly. Scientists will find such skills useful in training and managing their own research staffs, and they will enhance their effectiveness when called upon to take part in training programs. This course recognizes the

importance of training in improving the efficiency and relevance of agricultural research as well as a significant means of technology transfer.

c. Short Course in Writing, Editing, and Presentation of Information

Scientists increase their effectiveness as well as the value of their work by improving their ability to plan, write, and present research proposals, project budgets, journal articles, scientific papers, and popular articles. They need to be able to communicate effectively with administrators, professional peers, extension specialists, agricultural educators, community leaders, and farmers. Few scientists have had the opportunity during their professional training to learn and practice writing and presentation methods beyond those directly related to writing their thesis or journal articles.

Given the continuing need for this type of training, it is proposed there be a 2-to-3-week course, offered semi-annually, for up to 30 scientists in each course. This course should be made extremely practical, with scientists using the course time to plan, write, and edit materials they can use later in their work.

When there is sufficient interest, the course can be broadened to include the use of photography and graphs in reporting agricultural research.

d. Short Course in Management of Agricultural Research Projects, Agricultural Programs, and Field Stations

Every scientist must plan and manage human, financial, and physical resources. Few scientists in the course of their professional education have had opportunity to study, learn, and practice the most basic principles of management. What is proposed here is course of 1-week for up to 25 scientists in critical managerial roles. It should be offered annually.

e. Short Course in Use of Microcomputers by Agricultural Scientists

Appropriate use of microcomputers can increase the efficiency and accuracy with which agricultural scientists plan and implement experiments as well analyze results. Until microcomputers become more widely available to agricultural scientists in Bangladesh, a 2-week course offered annually is proposed for up to 20 scientists. Such a course has been developed, tested, and used widely by Michigan State University. It would be possible to contract with that institution to organize and conduct such a course in Bangladesh and to train a team of

Bangladesh staff to carry out subsequent courses.

f. Short Course on Computer Technology and Time Management for Directors and Division Heads

This one-week course for up to 30 directors and division heads in BARC and the constituent institutes would include: (a) computer applications on research, management, accounting, and records; (b) operational requirements of computer sciences; (c) management and supervision of computer installations; (d) training of personnel in operation, maintenance, and use of computers, and (e) ways computers can help busy people budget and manage their time.

Depending upon the number of individuals involved and role of development of computer sciences, this short course could be repeated annually or semiannually.

4. Hold National Colloquia on Specific Topics

There are innumerable agricultural research and research-related activities in Bangladesh that involve many topics which are of common concern to a number of ministries and other agencies. Effective resolution frequently will depend on collaboration and cooperation in action programs and maximizing the use of available resources. To facilitate in-country communication on such topics, it is proposed that BARC join with the leadership of other agencies in sponsoring a series of colloquia. These events, perhaps of 1 or 2 days each, might vary in size from a few scientists and administrators to up to a 100 or so depending upon the topic and timing.

One of the first steps of any organizing group would be to develop a list of potential topics and then determine the breadth and intensity of interest in each. Such topics might include: applied anthropology and rural sociology in agricultural research and development; women in agriculture; and potentials of minor crops and products.

5. Organize Regional Workshops on Specific Topics

Agricultural research and development in Bangladesh is moving into many areas in which other developing countries, particularly in Asia, already have considerable experience and expertise. It is suggested there be a series of 4-to-5 day workshops to which some 15 to 25 authorities in a given topic would be invited to Bangladesh to report on their experiences and to discuss with 25 to 50 Bangladesh scientists and specialists the ways of developing appropriate projects and programs in Bangladesh. These would be workshops in the sense that the Bangladeshis enrolled, using those invited from the outside as resource

persons, would develop specific plans and proposals for undertaking research, education, extension, or development activities in the particular field.

Topics for such workshops suggested during discussions in Bangladesh were: agro-forestry, farming systems, post-harvest technology, energy in agriculture, integrated pest management, and agricultural education/training.

One adaptation of this general idea is the suggestion that BARC hold an invitational workshop on agricultural training. Invitations would be extended to representatives of agricultural universities and training institutes in Asia to spend up to a week meeting with directors and training officers of various agricultural organizations. A product of such a workshop would be the identification of subject areas in which various institutions in Asia would be willing to develop arrangements for training Bangladeshi scientists, educators, specialists, and technicians. The possibilities would range from providing instructors for in-country short courses, to organization of special courses to be presented in Bangladesh or on the home campus, to establishment of continuing sister-to-sister institutional agreements, to providing advanced degree programs with opportunities for Bangladeshi students to do their research in their own country.

Such a workshop can be an efficient way of rapidly broadening the resource base available for the in-country and advanced level training of Bangladeshis. Various cooperative training programs could be designed and tested.

6. Organize National Workshop on Agricultural Communication

Working with other relevant agencies, it is proposed that BARC organize a one-week workshop for the communication officers and principal information staff members of the major agencies, public and private, concerned with planning, writing, editing, publication, and dissemination of agricultural information through bulletins, films, radio, television, newspapers, magazines, journals, and leaflets of commercial firms.

Such a workshop would have several objectives: (a) increasing mutual awareness of the responsibilities and activities of those involved; (b) exchanging information on experiences, processes, and techniques; (c) developing arrangements for cooperative use of limited resources or special equipment/facilities, and (d) consideration of ways of linking more effectively with the sources of information regarding new agricultural technology.

A byproduct could be the identification of areas in which the various agencies might cooperate to provide in-country training in specific communication skills.

5. IMPLEMENTATION

1. Adopt a Strategy for Personnel Development

The strategy recommended for undertaking the massive personnel development task of BARC is one which:

- a. Maximizes the use of existing local institutions.
- b. Encourages and facilitates inter-ministerial and inter-institutional cooperation and collaboration.
- c. Encourages and rewards innovation in instructional methods.
- d. Stimulates in individuals the growth of professional values and characteristics.
- e. Recognizes learning for professional and personal development as a continuing, life-long process.
- f. Provides training opportunities for personal growth for personnel at all organizational levels.
- g. Stimulates individuals to seek and take advantage of opportunities to learn new skills and gain relevant experience on their own.
- h. Uses and demonstrates materials and methods which learners can use in training others.
- i. Emphasizes learning-by-doing methods and practical orientations.
- j. Builds competence and confidence in the learner.

Underlying this strategy is the basic philosophy that one's ability to get a job done depends to a certain extent upon his own experience and expertise. But most importantly, it depends upon the skills, attitudes, experience, expertise, and motivation of those who work for him or those whom he supervises.

2. Establish Objectives for Training Agricultural Scientists

While it is necessary to prepare behavioral or performance objectives for every training program, it is particularly important

that training objectives for agricultural scientists be selected carefully and be expressed clearly. If this is not done, some scientists will resist participation in the training sessions on the grounds that they already know, understand, or can do what is being taught.

Therefore, those planning a training activity for a particular group are advised to select specific objectives from one or more of the following:

a. Ability to define concepts of and approaches to research appropriate to the problem and available resources.

b. Ability to establish more ambitious (or more realistic) goals for research in relation to meeting farmer needs and that are congruent with national development goals.

c. Awareness of the key and newly identified constraints to production of the commodity under study.

d. Ability to develop, accept, or learn more efficient, effective methods of research.

e. Interest and competence in communicating the results of research to those who can help farmers to adapt and apply them.

f. Awareness of the importance of and willingness to participate in exchanges of information and materials with other institutions - national, regional, and international.

g. Recognition of the importance of helping teach others how to use improved technology and ability to serve as teachers in a variety of instructional situations.

h. Ability to budget and manage time, facilities, labor, equipment, and other resources in planning and conducting a research project or program, or in the administration of an experimental station or farm.

i. Effective employment of library and documentation services to plan and conduct research.

j. Efficient use and maintenance of research instruments and equipment.

3. Initiate appropriate action to establish the Training and Communication Division in BARC.

4. Begin to identify candidates for key posts in the T & C Division, and arrange training programs for them as necessary.

5. Concurrently, decide which of the many short-term training activities proposed will be undertaken, in what sequence, and when. This will enable development of a schedule to provide lead time for organizing the courses and scheduling individuals to participate.

6. In relation to this schedule, inventory in-country resources to determine which institutions and individuals may be called upon to plan and conduct courses, workshops, and colloquia.

7. Determine to what extent outside consultants or resource persons will be needed, then prepare the terms of reference and schedules, and initiate action to identify these persons.

Until the Training and Communication Division is established and numbers of staff increased, it will be necessary to draw upon consultants to help organize and conduct the proposed short term training activities. If such consultants are available in Bangladesh, it would be most efficient and economical to use them. If expatriate consultants are required, it may be possible to consolidate or focus their activities as follows:

a. A Specialist in the organization and conduct of agricultural short courses and workshops to work with BARC and the component institutes in planning the series of short courses on planning and managing agricultural research projects. He would spend at least two periods in Bangladesh: First, to organize and help conduct the workshop in teaching and workshop methods in agriculture. This workshop could be used for initial planning the series of courses. Second, to assist in the conduct of the first course in the series.

8-10 weeks total

b. A Consultant to help organize and conduct national colloquia and regional workshops, including participation in the first colloquia and first workshop.

4 weeks total

c. Expatriate resource persons for various short courses and workshops.

Estimate 45 days

8. Continue to manage the fellowship program, expanding the scope of operations as personnel and time permit.

9. Cooperate with any study group established to develop a master plan for higher education in agriculture in Bangladesh.

10. Enter into a retainer contract with the UNDP Development Training and Communication Planning Group in Bangkok for such services as it can supply in helping to plan and prepare materials for in-country training activities.

ANNEX B

INDIVIDUALS INTERVIEWED DURING CONSULTANCY

Ministry of Agriculture

A.M. Anisuzzaman, Secretary of Agriculture

BARC

Kazi M. Badruddoza, Executive Vice-Chairman

Ekramul Ahsan, Member-Director

Kamal Uddin Ahmad, Member-Director

Ahmed Hussain, Director of Training

BARI

M.M. Rahman, Director

BARI

S.M.H. Zaman, Director

H.R. Talukdar, Technical Editor and Head I/C
Division of Publications and Public Relations

Farhad Jameel, PSO (Training), Head I/C
Applied Research and Training Division

CERDI

G. Milki, I/C Resource Division

Faizur R. Chowdhury, Principal Information and Training Officer

BAU

Gholam Mehboob, Professor and Head, Department of Extension

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and Training

Shamsu Z. Zoha, Department of Agricultural Extension

Department of Agricultural Extension

S.A. Mahmood, Director General

M.P. Singh, Project Manager, FAO/UNDP Project

Lal Karamchandani, UNDP/FAO Adviser

IFDC/BADC Project

Kenneth Moots, Marketing Consultant

R. Burton, Project Manager

USAID

Joanne Hale, Assistant Agricultural Development Officer

Mel Chatman, Training Officer

World Bank

John Hall

IADS Project Specialists

ANNEX D

DUTIES AND QUALIFICATIONS OF PROFESSIONAL STAFF FOR
TRAINING SECTION

Research and Training Officers. The principal duties of these SSOs will be to identify specific training needs in the agricultural research and research support staffs, develop in-country training, identify and mobilize training staffs and materials, and follow-up on the results of training. This professional staff will be composed of SSOs in such fields as agronomy, soils, pest management, water resource management, and agricultural economics/social sciences.

In addition, they will have experience and special training in instructional methods. They will travel widely in Bangladesh, develop in-country training networks, and encourage close working relations between research and extension staffs. One of their continuing duties will be to assist in manpower planning.

Fellowship Managers. These SSOs will be responsible for administering procedures for the selection, scheduling, preparation and dispatch of individuals for advanced studies, short-term training, study tours, and sabbaticals. It will be useful if these managers have an agricultural background, at least masters level degrees, and an excellent command of written English. The latter is necessary because they will correspond extensively with universities and training institutes in relation to placement and monitoring of student, as well as in arranging short-term training and tours abroad.

Short Course Managers. These SSOs will be responsible for assisting Research and Training Officers in the organization and conduct of in-country short courses, colloquia, and workshops. They will arrange for physical facilities and equipment, stipends and honoraria, transportation, supplies, and clerical support. They will develop and keep an up-to-date inventory of sites where training activities can be managed conveniently. A background in agriculture is useful but significant administrative experience will be required.